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Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte MICHAEL J. SULLIVAN

Appeal No. 2004-0242
Application No. 09/873,594

ON BRIEF

Before GARRIS, NASE, and CRAWFORD, Administrative Patent Judges.
NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 4 to
7, 10 to 13 and 16 to 18, which are all of the claims pending in this application.

We AFFIRM.

BACKGROUND

The appellant's invention relates to golf balls and, more particularly, to improved standard and oversized golf balls comprising multi-layer covers which have a comparatively hard inner layer and a relatively soft outer layer such as that produced by the use of a polyurethane based outer layer. The improved multi-layer golf balls provide for enhanced distance and durability properties over single layer cover golf balls while at the same time offering enhanced "feel" and spin characteristics generally associated with soft balata and balata-like covers of the prior art (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellant's brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Nesbitt	4,431,193	Feb. 14, 1984
Wu	5,334,673	Aug. 2, 1994

Claims 1, 4 to 7, 10 to 13 and 16 to 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Nesbitt in view of Wu.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the answer

(Paper No. 15, mailed June 16, 2003) for the examiner's complete reasoning in support of the rejections, and to the brief (Paper No. 14, filed March 21, 2003) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations which follow.

Claimed Subject Matter

The independent claims on appeal read as follows:

1. A golf ball comprising:
 - a core;
 - an inner cover layer disposed on said core and having a Shore D hardness of 60, [sic] or greater [,] a thickness of from about 0.10 to about 0.01 inches, and comprising a low acid ionomer resin containing no more than 16% by weight of an alpha, beta unsaturated carboxylic acid; and
 - an outer cover layer comprising a polyurethane material.

7. A golf ball comprising:
 - a core;
 - an inner cover layer disposed about said core and having a thickness of from about 0.10 to about 0.01 inches, and comprising an ionomeric resin including no more than 16 % by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi; and
 - an outer cover layer disposed about said inner cover layer comprising a polyurethane material.

13. A golf ball comprising;
a core;
an inner cover layer disposed on said core comprising an ionomer resin;
and
an outer cover layer disposed about said inner cover layer comprising a polyurethane material.

Teachings of Nesbitt

Nesbitt's invention relates to a golf ball and more particularly to a cover construction for a golf ball. In the BACKGROUND ART section of the patent (column 1, lines 9-33), Nesbitt teaches:

Golf balls having a cover material marketed under the trademark "Surlyn" by E. I. du Pont de Nemours and Company of Wilmington, Del., are known in the art and such cover compositions generally comprise a copolymer of an olefin and at least one unsaturated monocarboxylic acid. Conventional two-piece golf balls are comprised of a solid resilient center or core with molded Surlyn covers. The cover used is normally a hard, high flexural modulus Surlyn resin in order to produce a gain in the coefficient of restitution over that of the center or core.

In a conventional two-piece golf ball, a hard, high flexural modulus Surlyn resin is molded over a resilient center or core. The hard, highly flexural modulus Surlyn resin for the cover of a two-piece golf ball is desirable as it develops the greatest hoop stress and consequently the greatest coefficient of restitution.

A two-piece golf ball having a hard, Surlyn resin cover however does not have the "feel" or playing characteristics associated with softer balata covered golf balls. Heretofore balata covered golf balls have been preferred by most golf professionals. If a golf ball has a cover of soft, low flexural modulus Surlyn resin molded directly over a center or core, it is found that little or no gain in coefficient of restitution is obtained.

Nesbitt then teaches in the DISCLOSURE OF THE INVENTION section of the patent (column 1, line 36, to column 2, line 9) that:

In accordance with the present invention there is provided a golf ball having a multilayer or two-ply cover construction for a solid resilient center or core wherein the multilayer cover construction involves two stage molded cover compositions over a solid center or core of resilient polymeric material wherein an increased coefficient of restitution is attained and wherein the "feel" or playing characteristics are attained similar to those derived from a balata covered golf ball.

The invention embraces a golf ball and method of making same wherein the ball has a solid center or core of resilient polymeric or similar material covered by a first layer or ply of molded hard, highly flexural modulus resinous material or of cellular or foam composition which has a high coefficient of restitution.

The first layer or ply is provided with a second or cover layer of a comparatively soft, low flexural modulus resinous material or of cellular or foam composition molded over the first layer and core or center assembly. Such golf ball has the "feel" and playing characteristics simulating those of a softer balata covered golf ball.

Through the use of the first ply or layer of hard, high flexural modulus resinous material on the core or center, a maximum coefficient of restitution may be attained. The resinous material for the first ply or layer may be one type of Surlyn marketed by E. I. du Pont de Nemours and Company of Wilmington, Del., and the other ply or cover layer may be of a different type of Surlyn resin also marketed by the same company.

The three-piece golf ball of the invention provides a golf ball in which the coefficient of restitution of the golf ball closely approaches or attains that which provides the maximum initial velocity permitted by the United States Golf Association Rules of two hundred fifty feet per second with a maximum tolerance of two percent, which velocity may be readily attained and the playing characteristics or "feel" associated with a balata covered ball secured while maintaining a total weight of the golf ball not exceeding 1.620 ounces without sacrificing any advantages of a golf ball having a standard Surlyn cover of the prior art or a golf ball having a softer balata cover.

In the BEST MODE FOR CARRYING OUT THE INVENTION section of the patent (column 2, line 31, to column 3, line 50), Nesbitt teaches:

Referring to the drawings in detail there is illustrated a golf ball 10 which comprises a solid center or core 12 formed as a solid body of resilient polymeric material or rubber-like material in the shape of a sphere. Disposed on the spherical center or core 12 is a first layer, lamination, ply or inner cover 14 of molded hard, highly flexural modulus resinous material such as type 1605 Surlyn marketed by E. I. du Pont de Nemours and Company, Wilmington, Del.^[1]

This material of the inner layer 14 being a hard, high flexural modulus resin produces a substantial gain of coefficient of restitution over the coefficient of restitution of the core or center. An outer layer, ply, lamination or cover 16 of comparatively soft, low flexural modulus resinous material such as type 1855 Surlyn marketed by E. I. du Pont de Nemours and Company ^[2] is then re-molded onto the inner ply or layer 14, the outer surface of the outer layer or cover 16 being of dimpled configuration providing a finished three-piece golf ball.

According to the United States Golf Association Rules, the minimum diameter prescribed for a golf ball is 1.680 inches and the maximum weight prescribed for a golf ball is 1.620 ounces. It is therefore desirable to produce a golf ball having an improved coefficient of restitution to attain an initial velocity for the golf ball approaching the maximum velocity limit of 255 feet per second, the maximum limit provided by the United States Golf Association Rules.

The hard, high flexural modulus resin is employed to increase the coefficient of restitution in order to attain or approach the maximum initial velocity for the golf ball. The use of a soft low flexural modulus resin provides little or no gain in the coefficient of restitution and may tend to reduce the coefficient of restitution thereby adversely affecting the initial velocity factor.

¹ As set forth on page 3 of the appellant's specification Type 1605 Surlyn® (now designated Surlyn® 8940) is a sodium ion based low acid (less than or equal to 15 weight percent methacrylic acid) ionomer resin having a flexural modulus of about 51,000 psi.

² As set forth on page 4 of the appellant's specification Type 1855 Surlyn® (now designated Surlyn® 9020) is a zinc ion based low acid (10 weight percent methacrylic acid) ionomer resin having a flexural modulus of about 14,000 psi.

In producing the golf ball of the invention, the density of the center or core may be varied and the relative thicknesses of the layers, plies or laminations 14 and 16 may be varied within limits so that the golf ball weight does not exceed 1.620 ounces, the minimum diameter not less than 1.680 inches, and the ball be capable of an initial velocity approaching 255 feet per second. However, the finished golf ball may be of larger diameter providing the total weight of the ball does not exceed 1.620 ounces.

Thus, by varying the density of the center or core 12 and varying the thicknesses of the plies or layers 14 and 16 of the cover construction, a golf ball may be produced having a total weight not exceeding 1.620 ounces and a minimum diameter of 1.680 inches and having a comparatively high coefficient of restitution, the ball closely approaching or attaining in play the maximum permitted initial velocity of 255 feet per second.

In the golf ball of the invention the thickness of the inner layer or ply 14 and the thickness of the outer layer or ply 16 may be varied to secure the advantages herein mentioned. It is found that the inner layer 14 of hard, high flexural modulus resinous material, such as Surlyn resin type 1605, is preferably of a thickness in a range of 0.020 inches and 0.070 inches. The thickness of the outer layer or cover 16 of soft, low flexural modulus resin, such as Surlyn type 1855, may be in a range of 0.020 inches and 0.100 inches.

For example, a center or core 12 having a 0.770 coefficient of restitution is molded with a layer of hard, high modulus Surlyn resin, such as Surlyn type 1605, to form a spherical body of a diameter of about 1.565 inches. This spherical body comprising the core or center 12 and layer 14 of the hard, high modulus Surlyn resin has a coefficient of restitution of 0.800 or more.

This center or core 12 and inner layer 14 of hard resinous material in the form of a sphere is then re-molded into a dimpled golf ball of a diameter of 1.680 inches minimum with an outer or cover layer 16 of a soft, low flexural modulus resin such as Surlyn type 1855. The outer layer of the soft resin is of a thickness of 0.0575 inches. The soft Surlyn resin cover would have about the same thickness and shore hardness of a balata covered golf ball and would have the advantageous "feel" and playing characteristics of a balata covered golf ball.

It is to be understood that the golf ball of the invention may be made of a diameter greater than 1.680 inches without exceeding the total weight of 1.620

ounces by varying the thickness of the inner layer or ply 14 and the outer cover layer or ply 16 and secure desired "feel" and playing characteristics.

Teachings of Wu

Wu's invention relates to golf balls and more particularly to polyurethane covered golf balls made from a polyurethane composition of a polyurethane prepolymer cured with a slow-reacting curing agent selected from the group of slow-reacting polyamine curing agents and difunctional glycols. Wu states (column 1, lines 11-14) that such a golf ball has improved resiliency and shear resistance over golf balls made from conventional polyurethane formulations. Wu teaches (column 1, line 15, to column 2, line 44) that:

Conventionally, golf balls are made by molding a cover about a core that is either a solid one-piece core or a wound core made by winding thin elastic thread about a center. The center is either a solid mass or a liquid-filled envelope which has been frozen prior to winding the thread therearound. Golf balls made from a solid core are referred to conventionally as two-piece balls while those with wound cores are referred to as three-piece balls. Attempts have been made to make a one-piece golf ball, i.e. a solid homogeneous golf ball; however, to date no commercially acceptable one-piece golf ball has been made.

Balata had been used as the primary material for covers of golf balls until the 1960's when SURLYN®, an ionomeric resin made by E.I. duPont de Nemours & Co., was introduced to the golf industry. SURLYN® costs less than balata and has a better cut resistance than balata. At the present time, SURLYN® is used as the primary source of cover stock for two-piece golf balls. The problem with SURLYN®-covered golf balls, however, is that they lack the "click" and "feel" which golfers had become accustomed to with balata. "Click" is the sound made when the ball is hit by a golf club while "feel" is the overall sensation imparted to the golfer when the ball is hit.

It has been proposed to employ polyurethane as a cover stock for golf balls because, like SURLYN®, it has a relatively low price compared to balata and provides superior cut resistance over balata. However, unlike SURLYN®-covered golf balls, polyurethane-covered golf balls can be made to have the "click" and "feel" of balata.

. . .

It has now been discovered that a polyurethane prepolymer cured with a slow-reacting curing agent selected from the group of slow-reacting polyamine curing agents or difunctional glycols produces a golf ball cover that has good durability and performance. Golf balls made in accordance with the present invention have been found to have improved shear resistance and cut resistance compared to golf balls having covers made from either balata or SURLYN®.

Broadly, the present invention is a golf ball product made from a polyurethane prepolymer cured with a slow-reacting curing agent selected from the group of slow-reacting polyamine curing agents or difunctional glycols. The term "golf ball product" as used in the specification and claims means a cover, a core, a center or a one-piece golf ball. The cover of a golf ball made in accordance with the present invention has been found to have good shear resistance, cut resistance, durability and resiliency. Preferably, the polyurethane composition of the present invention is used to make the cover of a golf ball.

The examiner's rejection

In the rejection of claims 1, 4 to 7, 10 to 13 and 16 to 18 under 35 U.S.C. § 103 (answer, p. 3), the examiner ascertained³ that Nesbitt discloses all of the claimed subject matter except for the outer cover of the golf ball comprising a polyurethane material. The examiner, in essence, concluded that in view of the teachings of Wu it

³ After the scope and content of the prior art are determined, the differences between the prior art and the claims at issue are to be ascertained. Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

would have been obvious to one skilled in the art to have modified Nesbitt's golf ball by using polyurethane as the outer cover material to increase the durability of the golf ball.

The appellant's argument

The appellant argues (brief, pp. 4-7) that the rejection under 35 U.S.C. § 103 is erroneous since the applied prior art, absent the use of impermissible hindsight⁴, does not suggest the subject matter of independent claims 1, 7 and 13. In the appellant's view there is no motivation⁵ in the applied prior art that would have made it obvious to one of ordinary skill in the art to have modified the golf ball of Nesbitt to arrive at the subject matter of independent claims 1, 7 and 13.

⁴ The use of hindsight knowledge derived from the appellant's own disclosure to support an obviousness rejection under 35 U.S.C. § 103 is impermissible. See, for example, W. L. Gore and Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

⁵ Most if not all inventions arise from a combination of old elements. See In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998). Thus, every element of a claimed invention may often be found in the prior art. See id. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See id. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the appellant. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Our Determination

In applying the test for obviousness⁶ we conclude that the teachings of Wu clearly would have made it obvious at the time the invention was made to a person of ordinary skill in the art to have modified Nesbitt's golf ball by using polyurethane as the outer cover material to achieve the expected benefits therefrom taught by Wu (i.e., to have the "click" and "feel" of balata; improved shear resistance and cut resistance; durability; and resiliency). Thus, it would have been obvious to one skilled in the art to have modified Nesbitt's three-piece golf ball having a spherical core, an inner layer of type 1605 Surlyn® and an outer layer of type 1855 Surlyn® by replacing the type 1855 Surlyn® in the outer layer with polyurethane as suggested and taught by Wu. Therefore, the teachings of the applied prior art alone (i.e., without the use of impermissible hindsight) are suggestive of the subject matter of independent claims 1, 7 and 13.

In view of our determination above we disagree with the appellant's argument that the rejection under 35 U.S.C. § 103 is erroneous. While the appellant has correctly pointed out the deficiencies of both Nesbitt and Wu on an individual basis, nonobviousness cannot be established by attacking the references individually when

⁶ The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See In re Young, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991) and In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

the rejection is predicated upon a combination of prior art disclosures. See In re Merck & Co. Inc., 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986). In our view, the combined teachings of Nesbitt and Wu are clearly suggestive of the claimed subject matter as set forth above. Lastly, we incorporate the examiner's response to the appellant's argument (answer, pp. 4-7) as our own.

For the reasons set forth above, the decision of the examiner to reject independent claims 1, 7 and 13, and claims 4 to 6, 10 to 12 and 16 to 18 dependent thereon, under 35 U.S.C. § 103 is affirmed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 4 to 7, 10 to 13 and 16 to 18 under 35 U.S.C. § 103 is affirmed.

No time period for taking any subsequent action in connection with this appeal
may be extended under 37 CFR § 1.136(a).

AFFIRMED

BRADLEY R. GARRIS
Administrative Patent Judge

JEFFREY V. NASE
Administrative Patent Judge

MURRIEL E. CRAWFORD
Administrative Patent Judge

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